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NOTES AND LITERATURE

ZOÖLOGY

Plankton of Northern Seas.[1]— The earlier parts of this series of monographs (see this journal, vol. 39, p. 341) have been supplemented by two additional sections containing six more papers dealing respectively with the pelagic annelids, chætognaths, Rotatoria, Acantharia, Radiolaria (Acanthometrida), diatoms, and a portion of the pelagic eggs and larvæ of the fish of northern seas, that is of water north of 50° N.

The papers on the pelagic annelids and the chætognaths are necessarily brief, the former including only nine, and the latter but seven species. Dr. Strodtmann follows Krumbach in making use of the grasping teeth of Sagitta as diagnostic characters for specific distinctions. The pelagic rotifers are somewhat more fully treated by Dr. Lauterborn. As yet the marine rotifers are very incompletely known, except in the Baltic and North Seas. Only sixteen marine and brackish water forms have as yet been found in northern waters. About forty additional species of fresh-water rotifers are known to enter the seas but they are adventitous and do not become acclimated to the marine habitat, except in a few cases, in which marine varieties of fresh-water species are known, as for example in *Anuræa aculeata* var. *platei*, and *A. cochlearis* var. *recurvispina*. The marine species are all coastal or brackish-water forms, none being known as yet from the high seas.

Dr. Popofsky's monograph of the Acantharia (sublegion Acanthometra) will be especially welcome as it embodies the revision which he has recently completed of this group, the first to be made since the publication of Haeckel's monograph of the Radiolaria. The author takes a justly conservative ground in the matter of species in this group and is much inclined to question the reported occurrence of certain forms in northern waters. He notes the solubility of the skeletal structures (calcium-aluminium silicate or hydrate) in acids, alkalis, sea water, or distilled water, and rejects species founded on "skeletlos" specimens.

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[1] *Nordisches Plankton.* Herausgegaben von Prof. Dr. K. Brandt und Dr. C. Apstein. *Dritte Lieferung.* M. 10. X. Anneliden, J. Reibisch, 10 pp., 15 figs.; Die Chætognathen, S. Strodtmann, 8 pp., 11 figs.; Nordische Plankton, Rotatorien, R. Lauterborn, 25 pp., 17 figs. XVI. Die nordischen Acantharien. I. Teil and Nachtrag, A. Popofsky, 27 pp., 20 figs. XIX. Diatomeen, H. H. Gran, 146 pp., 178 figs. *Vierte Lieferung.* M. 10. III. Eier und Larven von Fischen, I. Teil, E. Ehrenbaum. Kiel und Leipzig, 1905, large 8vo. 216 pp., 82 figs.

Professor Dr. Gran's treatment of the diatoms of the plankton will be most welcome to all planktologists, for no comprehensive monograph of these organisms has appeared since that of Castracane in the *Challenger Reports*, and this unfortunately is far from complete. The more recent investigations, especially of Schütt and Cleve, have added greatly to our knowledge of the pelagic genera, but this revival of interest has been attended by considerable duplication and confusion in synonymy. The author's wide experience with these organisms makes his critical monograph most timely. The monograph includes nearly 300 species, most of which are figured. Excellent keys to both genera and species are found throughout the paper. It is perhaps desirable that the chromatophores should be more completely utilized in the description of species and that their position in the cell should be interpreted with reference to the vertical distribution in the sea and consequent exposure to light.

The first section of Dr. Ehrenbaum's account of the eggs and larvæ of the northern fishes found in the plankton includes nearly ninety species from about thirty families ranging from the Labridæ to the Pleuronectidæ. Although it does not include some families of greatest economic importance in northern seas, as for example the Clupeidæ and Gadidæ, this first part nevertheless contains much of interest along economic and fish-cultural lines. The young of nearly all, and the eggs and larvæ of many fishes are taken in the plankton. The pelagic habit is, however, of little systematic significance since the young of species of the same genus are in some instances pelagic, in others benthic in distribution. The author notes the significance of dimensions and pigmentation as diagnostic characters of the young and urges the importance of the examination of living material. Preserved eggs and larvæ, even in the best condition, are not readily determined. The size of the eggs, and of the characteristic oil globules, and the number of fin-rays, and to a less extent the number of vertebræ, are subject to considerable variation. It is noteworthy that the range of this variation increases with the area of distribution of the species, and with the length of the breeding period under observation.

The author's account is abundantly illustrated with over three hundred figures many of which are original. The excellent work of the Helgoland Station is evident on many of the pages of this comprehensive report.

The authoritative character of the papers in this series insures for them a wide range of usefulness and a permanent value to all naturalists who are concerned with the pelagic life of the sea.

C. A. K.

Notes on Pennsylvania Fishes. *Notropis cayuga Meek.*— Early in August of 1904 I secured a single example of this minnow in the Allegheny River, above Port Allegany, in McKean County. This is, I believe, the first record within our limits. Other fishes noted from this locality were *Lampetra wilderi, Salvelinus fontinalis, Campostoma anomalum, Semotilus atromaculatus, Leuciscus elongatus, Rhinichthys atronasus, Catostomus commersonnii, C. nigricans, Erimyzon sucetta oblongus, Schilbeodes insignis, Esox vermiculatus, Ambloplites rupestris, Eupomotis gibbosus, Micropterus dolomieu, Boleosoma nigrum,* and *Uranidea gracilis.* In the summer of 1899 I noted *Polyodon spathula, Campostoma anomalum, Leuciscus elongatus, Notropis hudsonius, N. whipplei, N. cornutus, Rhinichthys atronasus, Stizostedion vitreum,* and *Boleosoma nigrum* from streams near Cole Grove and other places along the Allegheny.

In the Susquehanna tributaries in Cameron County during October of 1905, I noted *Lampetra wilderi* (apparently this species though I did not see it myself), *Semotilus atromaculatus, Leuciscus vandoisulus, Brama crysoleucas, Notropis cornutus, Rhinichthys cataractæ, R. atronasus, Exoglossum maxillingua, Catostomus commersonnii, C. nigricans, Schilbeodes insignis,* and *Boleosoma nigrum olmstedi.* All these species occur near Emporium. *Notropis amœnus* occurs near Paradise, in Lancaster County, where I have received it from Mr. J. S. Witmer.

Mesogonistius chætodon (Baird).— The only place where I have found this sunfish in Pennsylvania has been in the basin of Mill Creek in Bucks County, near Bristol. It seems to occur sparingly, and most all of my examples were secured in the colder months. I have not found any previous definite records for Pennsylvania.

Boleichthys fusiformis (Girard).— I have only found this in the same locality as the former in our State. The first example was secured July 23, 1905, and on December 24 of the same year I found it very abundant. Though known from the lower tributaries of the Delaware in New Jersey, this fish has never before to my knowl-